

REMARKS/ARGUMENT

The Examiner has rejected claims 1-4, 6, 8, and 14 under 35 U.S.C. Section 103(a) as being unpatentable over Oliensis, "Structure from Linear or Planar Motion," IEEE 1996 (the "Oliensis 1996 paper") in view of Irani, "Multi-Frame Optical Flow Estimation Using Subspace Constraints" (the "Irani paper"). The Examiner also rejected claim 15 over the Oliensis 1996 paper in view of the Irani paper and further in view of U.S. Patent No. 6,614,429. The Examiner has also objected to claims 1-14 on various grounds and provisionally rejected claim 1 based on double patenting.

Applicants herein cancel claims 1-15 and submit new claims 16-19. Applicants respectfully submit that the new claims represent patentable subject matter and render the Examiner's rejections and objections moot. No new matter has been added.

The new independent claim is claim 16. Claim 16 and its dependent claims now recite limitations including, inter alia, "dividing the successive image data into smoothing windows" and "computing a projection matrix which is block diagonal between different smoothing windows and which is used to recover the scene structure by solving for the structure vector." As noted by the Examiner, the Oliensis 1996 paper does not disclose dividing successive images into windows. The Examiner suggested, however, in the prior Office Action, that the Irani paper teaches dividing an image into windows and determining the direction of motion and 3D structure between the windows.

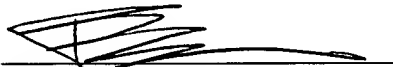
As discussed in the specification at pages 4-5, Irani's work and the Lucas-Kanade approach have similarities to the present invention. The Irani paper, however, does not disclose utilizing geometric restrictions to simplify the computational complexity in the manner of the present invention. As discussed in the abstract of the Irani paper, Irani teaches utilizing multi-frame subspace constraints to constrain the correspondence estimation process itself "and not for 3D recovery." The present invention, on the other hand, exploits the full set of constraints following from the known forms of translational and rotational image flows. There is no suggestion in Irani to utilize the linear motion of the successive image data to decompose a shift data representation into a motion vector and a structure vector which can be solved by computing a projection matrix that is block diagonal between different smoothing windows.

Appl. No. 09/652,820
Amdt. Dated May 24, 2003
Reply to Office Action of Dec. 23, 2003

Moreover, unlike the Oliensis 1996 paper, the present invention does not rely on using point data for the characterization of the successive image data. The Oliensis 1996 paper does not disclose utilizing "rotational flow vectors derived from intensity data collected from the successive image data" as recited in claim 16.

Applicants respectfully submit that the application is now in condition for allowance. If the Examiner has any questions, please contact the undersigned at 609 951-2522. Authorization is hereby given to charge any fees which may be required, except the issue fee, to Deposit Account 14-0627.

Respectfully submitted,



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May 24, 2004

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Docket No. NECI1086